

Centre Number	Candidate Number	Name
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

FISHERIES SCIENCE

5151/01

Paper 1

October/November 2006

1 hour 30 minutes

Candidates answer on the Question Paper.
No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.

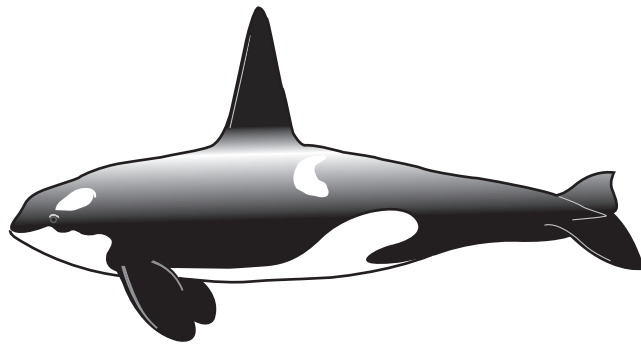
The number of marks is given in brackets [] at the end of each question or part question.

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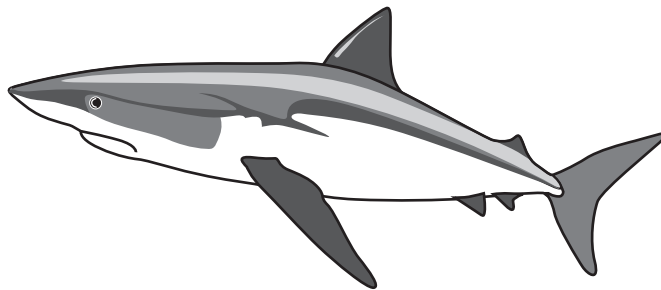
This document consists of **14** printed pages and **2** blank pages.



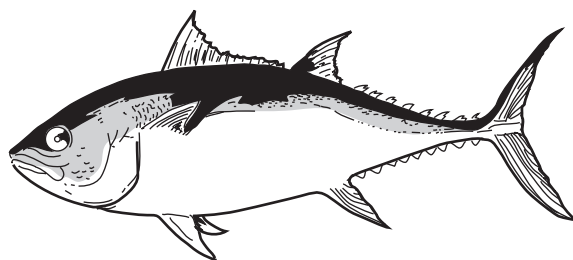
1 Fig. 1.1 shows three different marine animals (Not to the same scale).



Whale



Shark



Tuna

Fig. 1.1

Name each of the following using only the animals shown in Fig.1.1

(i) The animal that has lungs.

.....[1]

(ii) The animal that is completely covered with scales.

.....[1]

(iii) The animal that has an operculum.

.....[1]

(iv) The animal that has a horizontal tail fin.

.....[1]

(v) The animal that has a corselet.

.....[1]

(vi) The animal that has a heterocercal tail.

.....[1]

(vii) The animal that has finlets.

.....[1]

(viii) The animal in which the females lay a large number of eggs.

.....[1]

(ix) The animal in which the male has claspers.

.....[1]

(x) The animals that have two dorsal fins.

.....[1]

- 2 (a) Now that large mechanised fishing vessels are used, it is necessary for islands to have modern harbours.

State **five** functions of a modern harbour.

- 1.
.....
 - 2.
.....
 - 3.
.....
 - 4.
.....
 - 5.
.....
-[5]

- (b) Name **three** materials that are used to make the hulls of boats used in the Maldives.

- 1.
- 2.
- 3.[3]

- 3 (a) Using **only** the foods listed below complete the table, Fig. 3.1, by giving **two** examples of sources of each group of foods.

banana	chicken
coconut	eggs
egg plant	fish
ghee	limes
rice	vegetable oil

Food group	Source 1	Source 2
Carbohydrates		
Proteins		
Lipids/fats		
Vitamins and minerals		

Fig. 3.1

[8]

- (b) Explain what is meant by the term *malnutrition*.

.....

.....

.....[2]

- 4 Silver Sprat and Blue Sprat are two species of bait fish used by Maldivian pole and line fishermen.

Fig. 4.1 shows the number of boat-days in each year that Silver Sprat was used as bait by fishermen from Male atoll and from Gaafu Dhaalu (G. Dh) atoll, from 1987 to 1994.

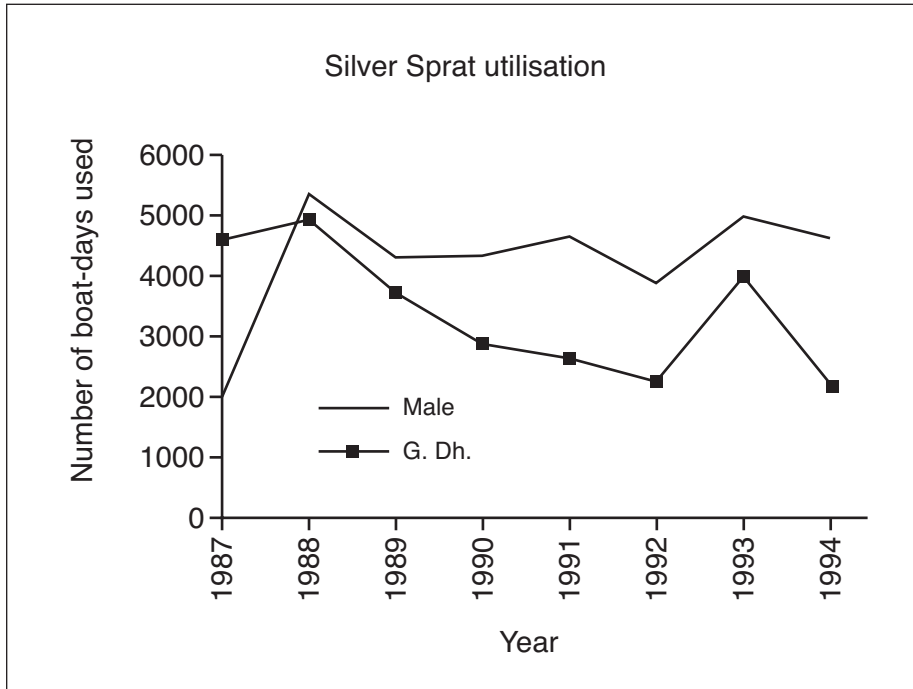


Fig. 4.1

Fig. 4.2 shows the utilisation of Blue Sprat by fishermen in the same two atolls from 1987 to 1994.

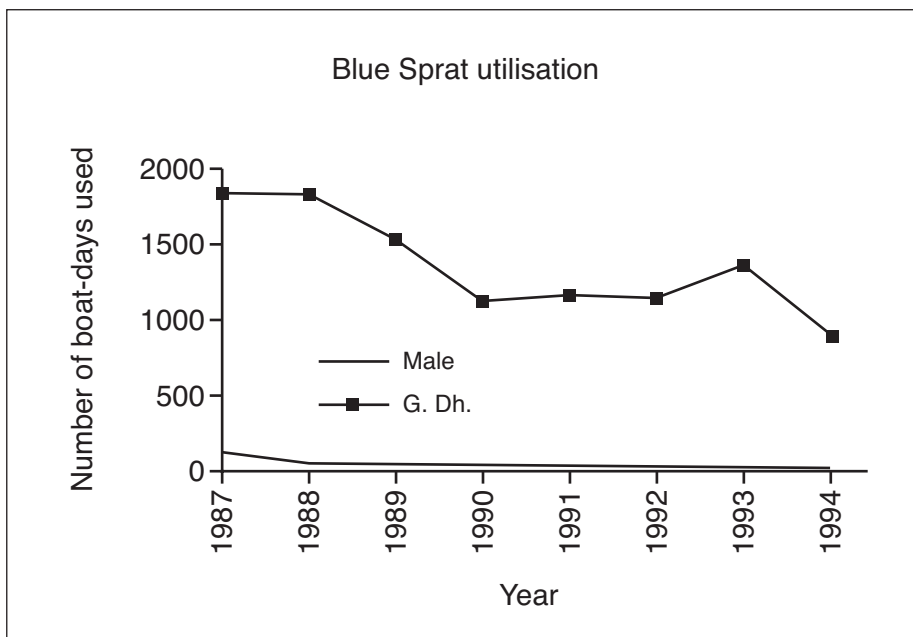


Fig. 4.2

(a) Compare the use of Silver Sprat by fishermen from the two atolls in the years 1987 to 1994.

.....
.....
.....
.....
.....[3]

(b) Suggest a reason for the difference in use of the Blue Sprat by fishermen in the two atolls.

.....
.....[1]

(c) Name **two** other species that are used as bait fish by Maldivian fishermen.

1.
2.[2]

(d) When predatory fish are present in the reef, bait fish form dense shoals instead of being spread over a wide reef area. Suggest an effect this will have on bait fishing.

.....
.....[1]

5 Figure 5.1 shows some of the Earth's structures in the marine environment.

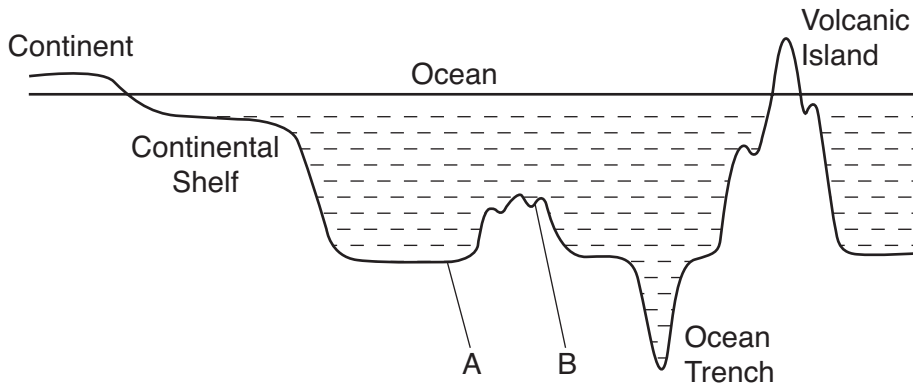


Fig. 5.1

(a) Name the structures labelled A and B on Fig. 5.1

A

B[2]

(b) Suggest **two** reasons why the continental shelf is important to the human population.

1.

.....

2.

.....[2]

(c) Explain how an ocean trench is formed.

.....

.....

.....

.....[2]

(d) Explain what is meant by the term *fringing reef*.

.....

.....

.....[2]

6 (a) Natural resources can be divided into two types, renewable and non-renewable.

(i) Explain what is meant by the term renewable resource.

.....
.....
.....[2]

(ii) Give an example of a renewable resource.

.....[1]

(b) The human population is another resource. Both the quantity and quality of labour is important.

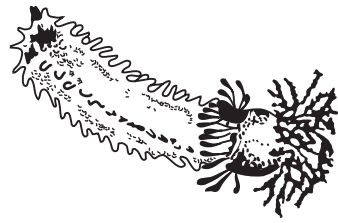
(i) At present there are worries about the labour supply in the Maldivian fishing industry. Suggest a reason for this.

.....
.....[1]

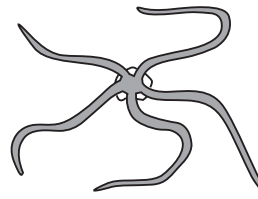
(ii) Several social factors, for example housing, are needed to provide a good labour supply. Suggest two other social factors that also help to provide a good labour supply.

1.
2.[2]

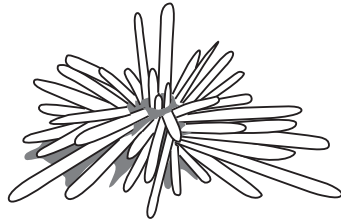
7 (a) Fig. 7.1 shows five examples of the phylum Echinodermata, labelled A, B, C, D and E.



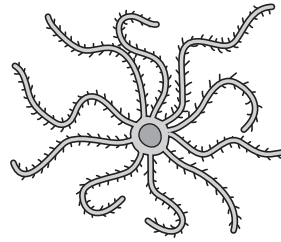
A



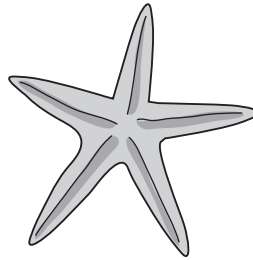
B



C



D



E

Fig. 7.1

Use the key below to identify the animals A to E in Fig. 7.1. Write the letter for each animal in the box next to its common name.

1. Animal has five visible arms go to 2

Animal does not have five visible arms go to 3

2. Animal has a clear central disc (brittle star)

Animal does not have a clear central disc (starfish)

3. Animal has more than five visible arms (feather star)

Animal has no visible arms go to 4

4. Animal has a soft body (sea cucumber)

Animal has long visible spines (sea urchin)

[5]

(b) Name a type of echinoderm that is harmful to coral reefs.

.....[1]

(c) Name a type of echinoderm that is used as human food.

.....[1]

(d) Echinoderms have tube feet. Give one function of tube feet.

.....[1]

8 (a) Explain why sea water containing a lot of marine algae has a high concentration of oxygen.

.....
.....
.....[2]

(b) (i) Suggest two effects on fish caused by sea water being cold.

1.
.....
.....
2.
.....
.....[2]

(ii) Suggest why these effects occur.

.....
.....[1]

(c) Explain what is meant by the term *eurythermal organisms*.

.....
.....
.....[2]

9 Read through the passage below about fish stocks and fish technology.
Complete the passage using words from the list.

- | | | | |
|------------------------|------------------------|-----------------------|-------------------|
| snappers | blue sprat | frigate tuna | angel fish |
| white tip | freezer vessels | pole and line | |
| tourist resorts | yellowfin tuna | trolling | |
| skipjack tuna | long lining | butterfly fish | |

The fisheries stocks of the Maldives can be found in three areas, in-shore, near-shore and off-shore. In-shore fisheries resources include bait fish and aquarium fish such as and Some reef fish such as groupers and are used as human food. Near-shore fisheries resources include little tuna and

Little tuna are often caught by The most important off-shore species are and The main fishing method for these fish is Nowadays many of these fish are not brought to island markets but are sold to [9]

10 The government of the Maldives has set up several organisations to manage the fisheries industry.

(a) One of these organisations is the Ministry of Fisheries and Agriculture (MOFA).

State **four** functions of this Ministry.

- 1.
.....
 - 2.
.....
 - 3.
.....
 - 4.
.....
- [4]

(b) Another organisation is the Maldives Industrial Fishing Corporation (MIFCO).

State **three** responsibilities of MIFCO.

- 1.
 - 2.
 - 3.
- [3]

Copyright Acknowledgements:

- Question 4 Fig. 4.1 and 4.2 © R. C. Anderson and H. R. Saleem. Government of Maldives. Marine Research Section, Ministry of Fisheries and Agriculture.
Question 5 Fig. 5.1 © A. Riyaz (1998) Ministry of Education. Government of Maldives.
Question 7 Fig. 7.1 © A. Riyaz (1998) Ministry of Education. Government of Maldives.

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